

## CLAIMS:

What is claimed is:

1. A temperature/reaction management system, comprising:  
a fuel reforming zone of a reformer system; and  
a mat material in fluid communication with a portion of an inlet  
of said reforming zone.
2. The system of Claim 1, further comprising a flame  
arrestor fluidly coupled to said mat material, and opposite said reforming zone.
3. The system of Claim 1, further comprising an inert  
material fluidly coupled to said mat material, and opposite said reforming zone.
4. The system of Claim 1, further comprising an inert  
material fluidly coupled to a flame arrestor, and opposite said mat material.
5. The system of Claim 1, further comprising an inert  
material fluidly coupled to said mat material, and opposite said reforming zone.
6. The system of Claim 1, wherein said mat material further  
comprises a type of material selected from the group consisting of woven, mesh  
like, fibrous, cloth like, paper like, and combinations comprising at least one of  
the foregoing types of materials.
7. The reformer system of Claim 1, wherein said mat  
material further comprises a single layer or a plurality of layers of material.
8. The system of Claim 7, wherein said plurality of layers of  
material further are held together using a binder, wherein said binder further  
comprises a binder selected from the group consisting of a sealing agent, an  
adhesive, a ceramic substance, and combinations comprising at least one of the  
5 foregoing binders.

9. The system of Claim 1, wherein said mat material further comprises a reflective surface.

10. The system of Claim 9, wherein said reflective surface further comprises a coating, wherein said coating further comprises a white, opaque material.

11. The system of Claim 1, wherein said mat material further comprises said mat material is disposed against an inlet of a reformer catalyst substrate of said reforming zone.

12. A method for managing the temperature and reaction of fuel in an energy conversion device, comprising:

dispensing an air/fuel mixture through a mat material disposed against an inlet of a reformer system;

5 maintaining a first temperature before said inlet that is less than a second temperature of a gas phase reaction;

inhibiting the propagation of a flame into said reformer system;

and

dispensing said fuel into said reformer system.

13. The method of Claim 12, further comprising dispensing said fuel through a flame arrestor fluidly coupled to said mat material.

14. The method of Claim 13, further comprising dispensing said fuel through an inert material fluidly coupled to said flame arrestor.

15. The method of Claim 12, further comprising dispensing said fuel through an inert material fluidly coupled to said mat material.

16. A fuel reformer system, comprising:

a reforming zone;

a mat material fluidly coupled to said reforming zone; and

a mixing zone fluidly coupled to said reforming zone.

17. The method of Claim 16, further comprising dispensing said fuel through a flame arrestor fluidly coupled to said mat material.

18. The method of Claim 16, further comprising dispensing said fuel through an inert material fluidly coupled to said flame arrestor.

19. The method of Claim 16, further comprising dispensing said fuel through an inert material fluidly coupled to said mat material.